



New questions

Crux: ICMR's serological survey findings may have relevance for modifying vaccination policy.

Highlights:

1. The results of the ICMR's third serological survey to ascertain the spread of COVID-19 show that nearly one in five Indians — about 270 million — may have been infected.
2. Compared to reports of city-focused serology surveys in Delhi and mathematical modelling estimates, the ICMR survey-results appear to be more conservative in estimating the true spread.
3. Experts of various hues point to the declining trend in infections since September, and the absence of multiple peaks in coronavirus cases as a pointer to the spread being far wider and speeding up 'herd immunity'— a state when a significant proportion of people in a locale have been infected, thereby retarding future spread.

Threats Persist

1. But it would be wrong to derive comfort from this situation. The ICMR emphasises that the results point to a significant number still potentially vulnerable, underscoring the need to be vaccinated and continuing with distancing and masking up.
2. Also, neither this survey nor any city-wide survey has evaluated how long antibodies persist and if certain virus mutant variants can overcome the protection from antibodies.

Vaccination drive:

1. Given that vaccines are round the corner for the general public and that no district has been immune from the virus, it is now no longer useful to know that 80% of India is still vulnerable.
2. Rather, such surveys must shift focus to asking more granular questions: need to vaccinate children and rural areas on priority. Since spread is higher among children and urban areas have already achieved herd immunity.
3. These and many more questions are no doubt already on the minds of specialist researchers but alongside the vaccination drives, the ICMR and the government health facilities must coordinate with a broader spectrum of specialists to investigate questions that can be used to guide and modify vaccination policy.



Rare earth metals are used extensively in clean energy technologies. But how safe are they?

Bottom line: Mining and disposal of these elements add to the environmental damages and ecological burden.

Clean energy and rare earth metals

1. Naturally abundant wind, geothermal, solar, tidal and electric energy are being hastened as the future of the planet's energy needs. And rare earth elements are used in a bevy of technologies to generate this cleaner, renewable energy.
2. These include wind turbine magnets, solar cells, smartphone components, cells used in electric vehicles, among others.

Rare earth metals

1. Also called rare earth metals, they comprise seventeen chemical elements — 15 lanthanides (Lanthanum to lutetium), scandium and yttrium.
2. Despite the name, rare earth elements are found abundantly in the Earth's crust. They are widely dispersed and found in low concentrations that are not economically exploitable.
3. Extraction and mining of rare earth metals involves similar land-use exploitation, environmental damage and ecological burden as any other mining operation.
4. They are mined using extremely energy-intensive processes, spewing carbon emissions into the atmosphere and toxins into the ground.
5. Many of these metals, which include mercury, barium, lead, chromium and cadmium, are extremely damaging to the health of several ecosystems, including humans.

Rare earth Challenge

1. A survey done by the WHO on the impact e-waste has on child health, raised concerns around chemical burns, cancer and stunted growth.
2. Eradicating these substances from discarded products is difficult and costly, which is why much of the e-waste exported to the developing world under the pretence of being reused or refurbished ends up being dumped.
3. The countries with the most rare earth metals currently are China (the largest reserves in the world), the United States, Brazil, India, Vietnam, Australia, Russia, Myanmar, Indonesia.



4. Like the cartelisation of oil and gas and the chances of oil embargoes, there are high possibilities of this happening to global rare earth metal reserves and supply chains. They are driven by changes in development models, innovation and discovery of resource availability.

Chinese Monopoly

Because of ambitious renewable energy initiatives resulting from many nations pursuing renewable technologies, there is a need for caution. Especially when the largest reserves in the world, the largest users and the country which is involved in a majority of the supply chains is China.

China's intents of hegemony, non-solidarity with other nations and aims of controlling various sectors and aspects of the world's energy landscape does not augur well for the environment in general, as well as for geo-politics and global renewable energy usage and scenarios. Its intents on doing the same with its vast rare earth reserves will be detrimental.

Recycling rare earth minerals

Recycling of these rare earth metals for continuous usage for various technologies is a good option that can be considered. It is a lengthy process which involves demagnetisation (by heating), crushing and roasting, followed by a leaching process and a separation method before a final roasting to produce a mixed rare earth oxide. Hundreds of thousands of tons of rare earth compounds are being produced and manufactured into products each year.

Recycling rare earth materials is challenging because once embedded in devices, they're difficult to take out. Instead of discarding phones or IT equipment after a couple of years, enterprises should aim to get the most out of the technology they have invested in through repairing or refurbishing. Having suitable recycling methods is a valuable contribution towards keeping the costs of the materials low and maximising the use of the rare earth elements.

Conclusion:

The usage of these metals in our most advanced technologies and which form a critical part of the renewable energy revolution should be handled with careful, sincere and cleaner measures if the way forward has to be greener and environment-friendly.